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AERIAL WILDLIFE SURVEY OF THE SAMBAA K'E CANDIDATE PROTECTED AREA MARCH 2009

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ABSTRACT

An ecological assessment of the Sambaa K'e Candidate Protected Area (SKCPA) and vicinity is required as part of the Northwest Territories Protected Area Strategy. The Working Group for the SKCPA requested that as part of Phase 2 ecological assessment an aerial wildlife survey of the SKCPA and vicinity be conducted. Community members worked with ENR to design the aerial survey and participated as observers. The survey area was covered by parallel line transects running north-south and spaced 10 km apart, except for areas around Cormack and Celibeta Lakes where flight lines were spaced 5 km apart. A fixed-wing Islander aircraft was used for the survey with a crew consisting of pilot, a recorder and 4 observers. The survey was flown 11–13 March, 2009; total flight line length including return to the community of Trout Lake was 2,315 km. Observations of all large ungulates and large predators, recent wildlife sign (e.g. tracks, feeding/bedding sites), and beaver lodges were recorded as waypoints into a GPS. The flight path was recorded as a track log into a GPS. All waypoints and track logs were entered into ArcGIS 9.2 for mapping and analysis. We observed 2 boreal caribou (*Rangifer tarandus caribou*), 22 moose (*Alces alces*), and 235 beaver (*Castor canadensis*) lodges. Ungulate sign was greatest in the Celibeta and Cormack Lake areas. Wolf *(Canis lupus*) and wolverine (*Gulo gulo*) tracks were observed but no animals were seen. The majority of predator tracks were associated with beaver lodges. Large mammal sign was relatively absent in an area that had not been selected as part of the Candidate Protected Area to the NE of the community of Trout Lake.

TABLE OF CONTENTS

INTRODUCTION 1

METHODS 4
- Survey Design 4
- Survey Flights and Data Collection 6
- Post-survey Data Manipulation and Analysis 9

RESULTS 10

DISCUSSION 17

ACKNOWLEDGEMENTS 20

LITERATURE CITED 21

APPENDIX A. Summary of the observations made on each of the six flight legs of the Sambaa K'e Candidate Protected Area wildlife survey, 11-13 March 2009. 22

LIST OF FIGURES

Figure 1. The southern Dehcho Region of the Northwest Territories with the Sambaa K'e Candidate Protected Area lands indicated by hatching. ENR administrative boundary of Dehcho in inset.....3

Figure 2. The survey area with the flight lines for the six different survey legs, each of approximately 375–400 km in length, starting and ending a the community of Trout Lake.....5

Figure 3. Copy of the SKCPA survey data sheet. 7

Figure 4. Moose observations •, new sign ■, and old sign ▲ in relation to fire history.....11

Figure 5. Boreal caribou observations •, new sign ■, and old sign ▲ in relation to fire history.....14

Figure 6. Beaver lodges observed during the survey of the Sambaa K'e Candidate Protected Area. 15

Figure 7. Wolf ■ and wolverine ▲ tracks observed during the survey of the Sambaa K'e Candidate Protected Area.....16

LIST OF TABLES

Table 1. Detailed descriptions of the 6 flight legs of the survey indicating date flown, flight time (h:m), flight distance, (km), departure weather, and observers. 8

Table 2. Observations of moose, boreal caribou and beaver lodges made during the six different survey legs. 10

INTRODUCTION

The Sambaa K'e Candidate Protected Area (SKCPA; Fig. 1) became part of the Northwest Territories Protected Area Strategy at the request of residents from the community of Trout Lake. The Canadian Wildlife Service (CWS) is the sponsoring agency for this Candidate Protected Area. The approximately 10,600 km^2 area is rich in fish and wildlife for subsistence harvesting, contains many traditional burial and important cultural sites, and contains areas of important boreal caribou habitat. Sambaa K'e people live a very traditional lifestyle relying heavily on this area for their food and strong cultural connections.

A working group for the SKCPA was formed in December 2006. Community members chair and make up a majority of the working group, which also includes members from Dehcho First Nations, Ducks Unlimited and the Federal and Territorial Governments. A key objective of the working group is to facilitate, guide and direct evaluation studies of the Candidate Protected Area. An ecological assessment is one component of the evaluation studies.

Although the ENR Fort Simpson Dehcho Boreal Caribou study (Larter and Allaire, 2008) includes a number of collared caribou located within the SKCPA, and the Sambaa K'e Dene Band (SKDB) has been conducting a boreal caribou study in the eastern part of the study area, the working group felt that an aerial survey of the entire area conducted in late winter would provide data to fill in gaps for some parts of the SKCPA and provide additional support to the results of other wildlife studies. The survey was to cover all the lands within the current Candidate Protected Area boundaries, and the area excluded within the outer

boundaries (Fig. 1). Another survey objective was to provide as much opportunity for local harvesters to participate as observers and especially to fly over areas they traditionally harvested from. Harvesters indicated that beaver trapping in the area had dropped off over the past few years and they were interested in finding out more about beaver abundance in the area.

During an SKCPA working group meeting in Trout Lake (20–21 January, 2009), community members and ENR Fort Simpson met to design an appropriate survey to meet the objectives.

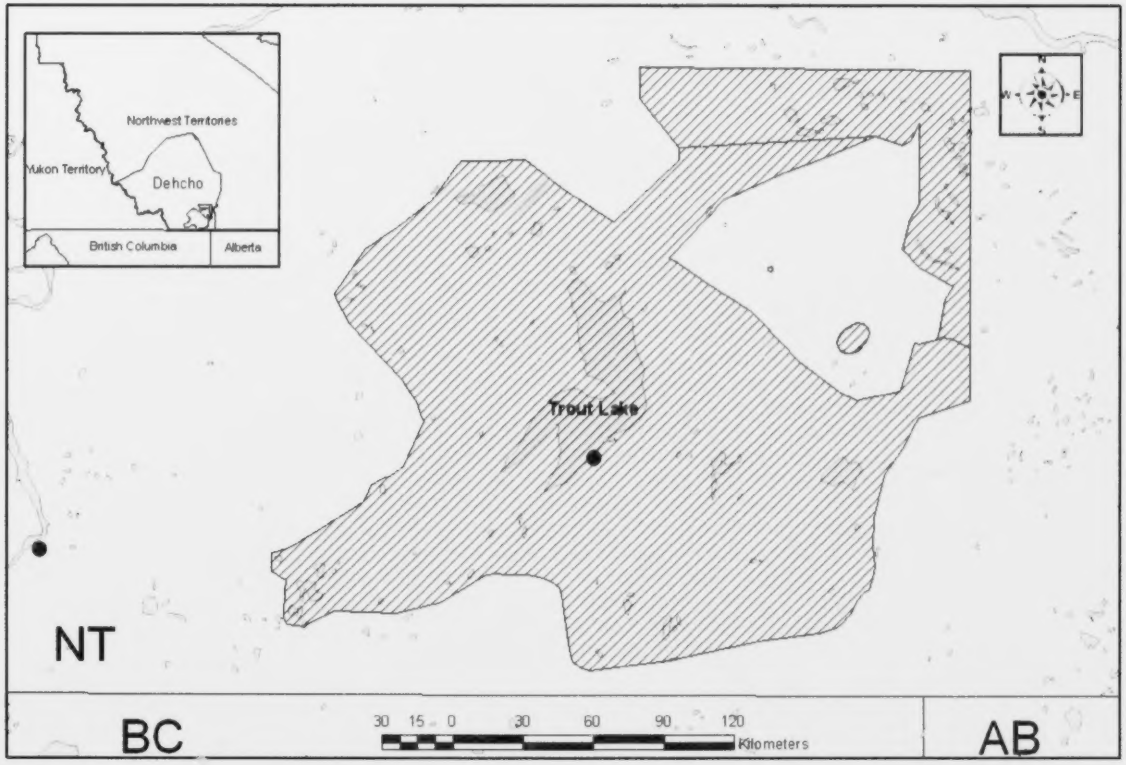

Figure 1. The southern Dehcho Region of the Northwest Territories with the Sambaa K'e Candidate Protected Area lands indicated by hatching. ENR administrative boundary of Dehcho in inset.

METHODS

Survey Design

The survey was designed as line-transect survey. Parallel lines were flown in a north-south direction following the prevailing winds for that time of the year. Transect lines were spaced 10 km apart over the majority of the area, however higher coverage was requested for the areas around Cormack and Celibeta Lakes because these areas were expected to have more wildlife diversity. In these areas lines were spaced 5km apart (Fig. 2). The survey was broken up into 6 flight legs that were no longer than 3.5 hours of flying in length. This reduced observer fatigue, provided a maximum number of 24 observer seats, broke the survey down into areas traditionally used by different harvesters, and utilized the current daylight hours most effectively. The aircraft chosen for the survey was an Britten-Norman Islander aircraft light utility aircraft (BN-2A), which with its two Cessna 206 based engines permitted the aircraft to power back and fly at 160 km/h while on survey lines, and with its large passenger window areas provided excellent viewing for 4 observers. The initial survey flight lines and legs were provided to SKDB before final approval of the survey design (Figure 2).

The survey crew consisted of a pilot and a recorder/observer in the front seats and four local observers in two rows. Crew members could communicate through headsets with live microphones. The survey was flown 11–13 March, 2009.

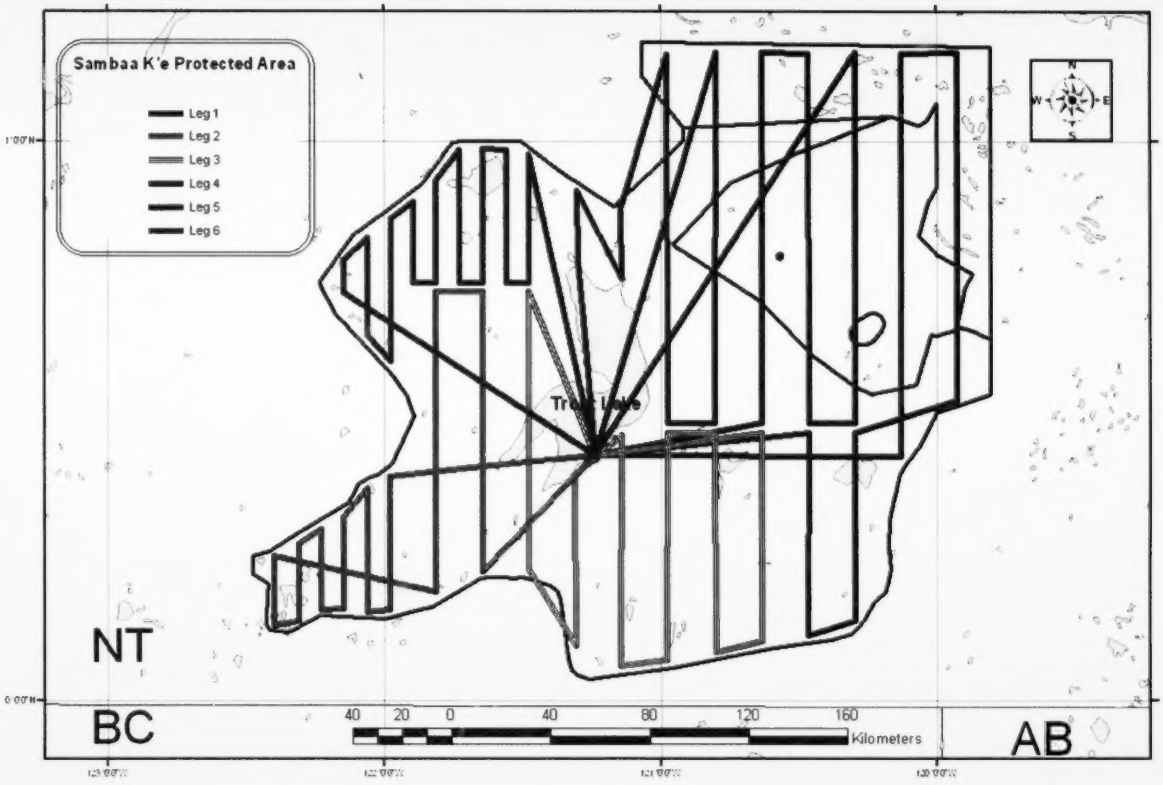

Figure 2. The survey area with the flight lines for the six different survey legs, each of approximately 375–400 km in length, starting and ending a the community of Trout Lake.

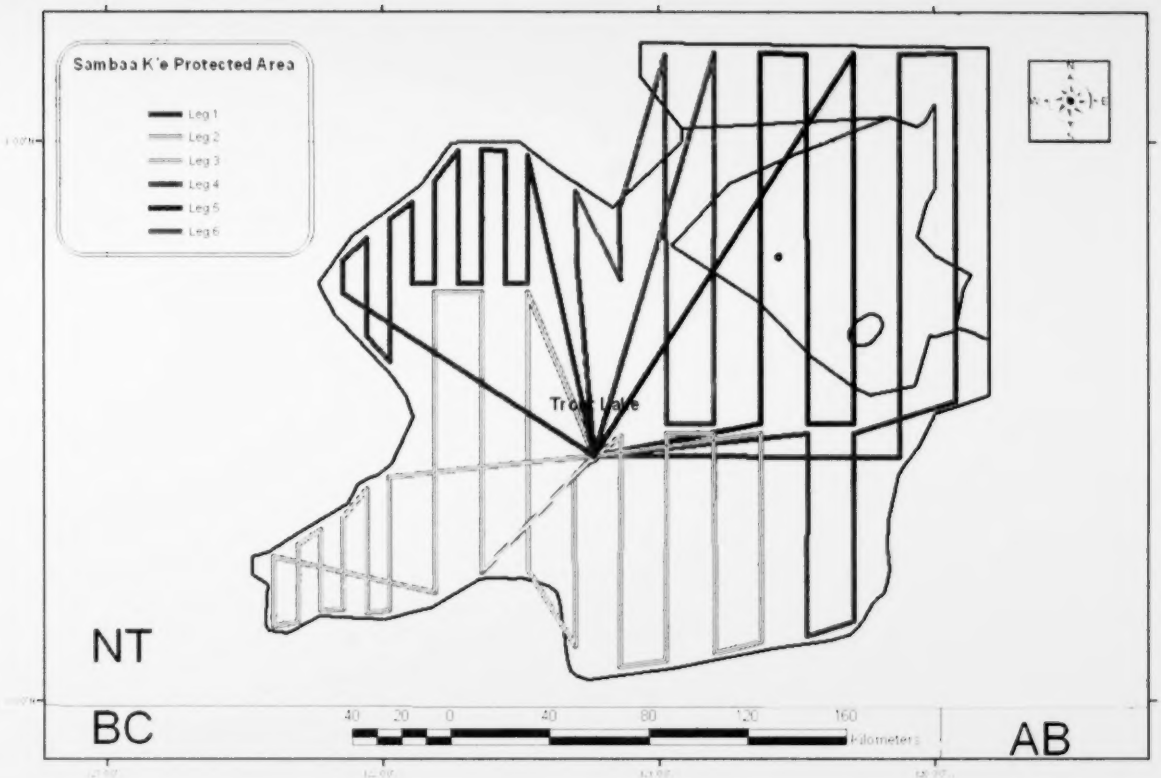

Figure 2. The survey area with the flight lines for the six different survey legs, each of approximately 375–400 km in length, starting and ending a the community of Trout Lake.

Survey Flights and Data Collection

We recorded direct observations of large ungulates (boreal caribou, moose, and wood bison), large predators (wolf, wolverine), beaver lodges, and fresh or old sign (tracks, feeding craters) of large ungulates and predators as waypoints with a Garmin 12XL global positioning system (GPS). If other species of wildlife or carcasses were observed we also entered them as waypoints into the GPS. We recorded whether observed ungulates were adults or young of the year. All observations were recorded on to a survey data sheet. The aircraft flight path was recorded as a track log into a Garmin map76S GPS. See figure 3 for a copy of the field data sheet. Observers that spoke only Slavey were seated by observers that were fluent in both Slavey and English. We attempted to maintain aircraft altitude at a constant *ca*. 200 m above ground level (agl) and airspeed at 160 km/h while the aircraft was on the survey flight line. At the completion of each survey leg all waypoints and track logs were downloaded into a laptop computer using Oziexplorer software.

On 11 March, 2 survey legs were completed. Observing conditions were ideal with sun and a blanket of fresh snow (Table 1). On 12 March, 3 survey legs were completed, because the forecast for 13 March was not favourable. Although conditions were more overcast than sunny they were good for observing. We were delayed completing the final leg on 13 March because of a large overnight snowfall, which required the runway to be cleared. For portions of the final survey leg observing conditions >1km from the aircraft were poor due to reduced visibility from blowing snow.

Sambaa K'e Protected Area Survey Form Leg _____ Page _____ of _____

Aircraft _____ Pilot _____ Date _____

Rt Observers: _____ Lt Observers: _____

Recorder: _____ Temp _____ Wind _____

Wypt	L R	Near Far	Spp C M B	Adult	Calf	Other Spp	Carcass	Comment
			C M B					
			C M B					
			C M B					
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Figure 3. Copy of the SKCPA survey data sheet.

Table 1. Detailed descriptions of the 6 flight legs of the survey indicating date flown, flight time (h:m), flight distance, (km), departure weather, and observers.

Flight Leg	Date Flown	Flight Time	Flight Distance	Departure Weather	Observers
1	11 March	2:30	374	-18°C, clear sunny, S 10 km/h	A. Jumbo, V. Jumbo, E. Kotchea, A. Lomen
2	11 March	2:34	387	-15°C, clear sunny, W 10 km/h	A. Jumbo, V. Jumbo, E. Kotchea, A. Lomen
3	12 March	2:41	409	-20°C, overcast w/sun, N 20 km/h	J. Deneron, A. Jumbo, T. Jumbo, E. Kotchea
4	12 March	2:30	384	-20°C, overcast w/sun, N 20 km/h	J. Deneron, E. Jumbo, T. Jumbo, E. Kotchea
5	12 March	2:30	376	-15°C, clear sunny, N 20 km/h	J. Deneron, E. Jumbo, T. Jumbo, E. Kotchea
6	13 March	2:26	385	-22°C, overcast w/snow, N 15 km/h	A. Jumbo, D. Jumbo, T. Kotchea, A. Lomen

Post-survey Data Manipulation and Analysis

We mapped all of waypoints of animal sign and/or beaver lodges over the flight line tracks in Oziexplorer. We moved all waypoints to either right or left of the flight line based upon notes recorded on the data sheets to provide the most accurate location information. Any observations of tracks that were recorded on both the left and right side of the aircraft remained on the flight line. All waypoint files were saved as text files, imported to a Microsoft excel spreadsheet and entered in ArcGIS 9.2 for mapping and analysis. All tracks were saved as polyline shapefiles in Oziexplorer for use in ArcGIS 9.2. We overlaid survey observations on Dehcho fire history maps for some of the analysis.

RESULTS

We flew six survey legs of 2:24 to 2:41 covering a total flight line length of 2,315 km (Table 1). Actual flight lines did not deviate significantly from proposed flight lines. Nine different community harvesters participated as survey observers. We observed 2 boreal caribou, 22 moose, and 235 beaver lodges (Table 2). We observed tracks of wolf and wolverine, but did not see any animals.

Table 2. Observations of moose, boreal caribou and beaver lodges made during the six different survey legs.

Survey Leg	Moose	Caribou	Beaver Lodges
Leg 1	6	0	40
Leg 2	5	1	54
Leg 3	0	0	67
Leg 4	0	1	28
Leg 5	9	0	21
Leg 6	2	0	25
TOTAL	22	2	235

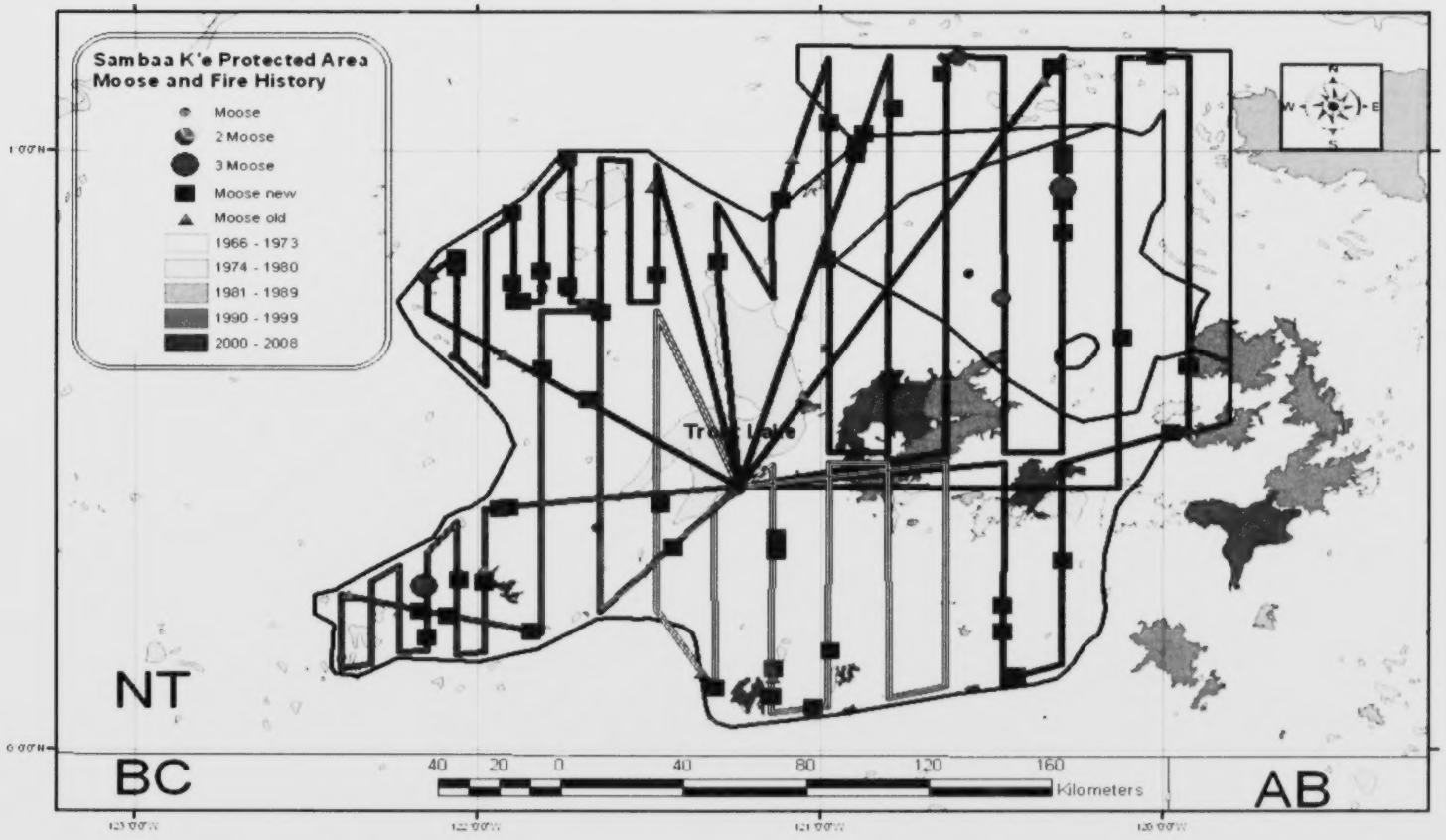

Figure 4. Moose observations ●, new sign ■, and old sign ▲ in relation to fire history.

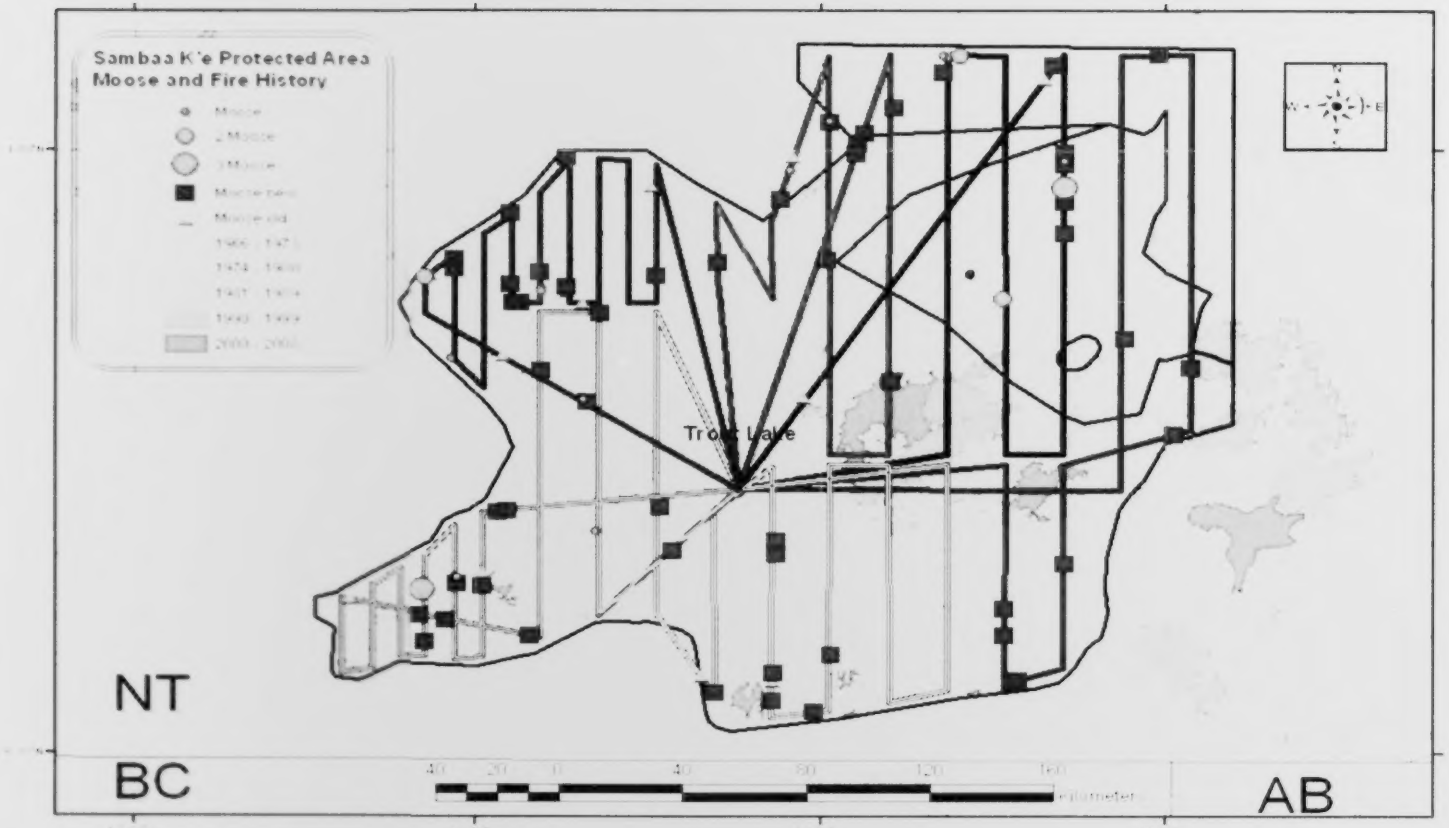

Figure 4. Moose observations , new sign ■, and old sign in relation to fire history.

Moose and moose sign was seen throughout the survey area with more frequent observations in the Celibeta and Cormack Lake areas (Fig. 4). The majority of moose observations and sign were associated with small drainages that had an abundance of willow growth. Most moose observed during the survey were lying down. It was only later in the day when moose were observed standing. There was little moose sign associated with the relatively extensive areas of recent (1990–2008) forest fires to the east of the community of Trout Lake (Fig. 4).

Boreal caribou and caribou sign was generally seen throughout the survey area with more frequent observations in the Celibeta and Cormack Lake areas. Areas to the SSE of the community of Trout Lake, and the large area to the ENE of Trout Lake, that is not included in the Candidate Protected Area had the least sign of caribou and what sign was there was old (Fig. 5). Most caribou and recent sign was associated with medium to dense black spruce (*Picea mariana*) cover, likely where snow conditions were more favourable for moving and feeding.

Beaver lodges were generally seen throughout the survey area except for areas to the ENE of the community of Trout Lake including the area not put aside as part of the Candidate Protected Area (Fig. 6). Most beaver lodges were associated with small creek drainages that had an abundance of willow growth. In areas to the north stands of aspen were more common; more of the lakes in this area had beaver lodges.

Wolf and wolverine tracks predominated to the western half of the survey area. There were a few observations of wolf tracks east of the community of Trout Lake (Fig. 7). The majority of wolverine and wolf tracks were observed at or

in the vicinity beaver lodges, often appearing to be checking on the presence of beaver. Some wolf tracks were seen on snowmobile trails.

There were very limited observations of large ungulates or predators on the eastern side of the survey area, specifically in the area not included as part of the Candidate Protected Area. Most of these areas often were dominated by fairly dense jack pine (*Pinus banksiana*) or white spruce (*Picea glauca*) forested pockets interspersed with large open fen areas dominated by larch (*Larix laricina*), with few small lakes and/or creeks. However, in these areas there was lots of sign of small mammals and birds like snowshoe hares (*Lepus americanus*) and sharp-tailed grouse (*Tympanuchus phasianellus*) in these areas, and likely an abundance of small furbearers. There was little wildlife sign in the large recently burned areas to the east of the community of Trout Lake (Figs. 4–7).

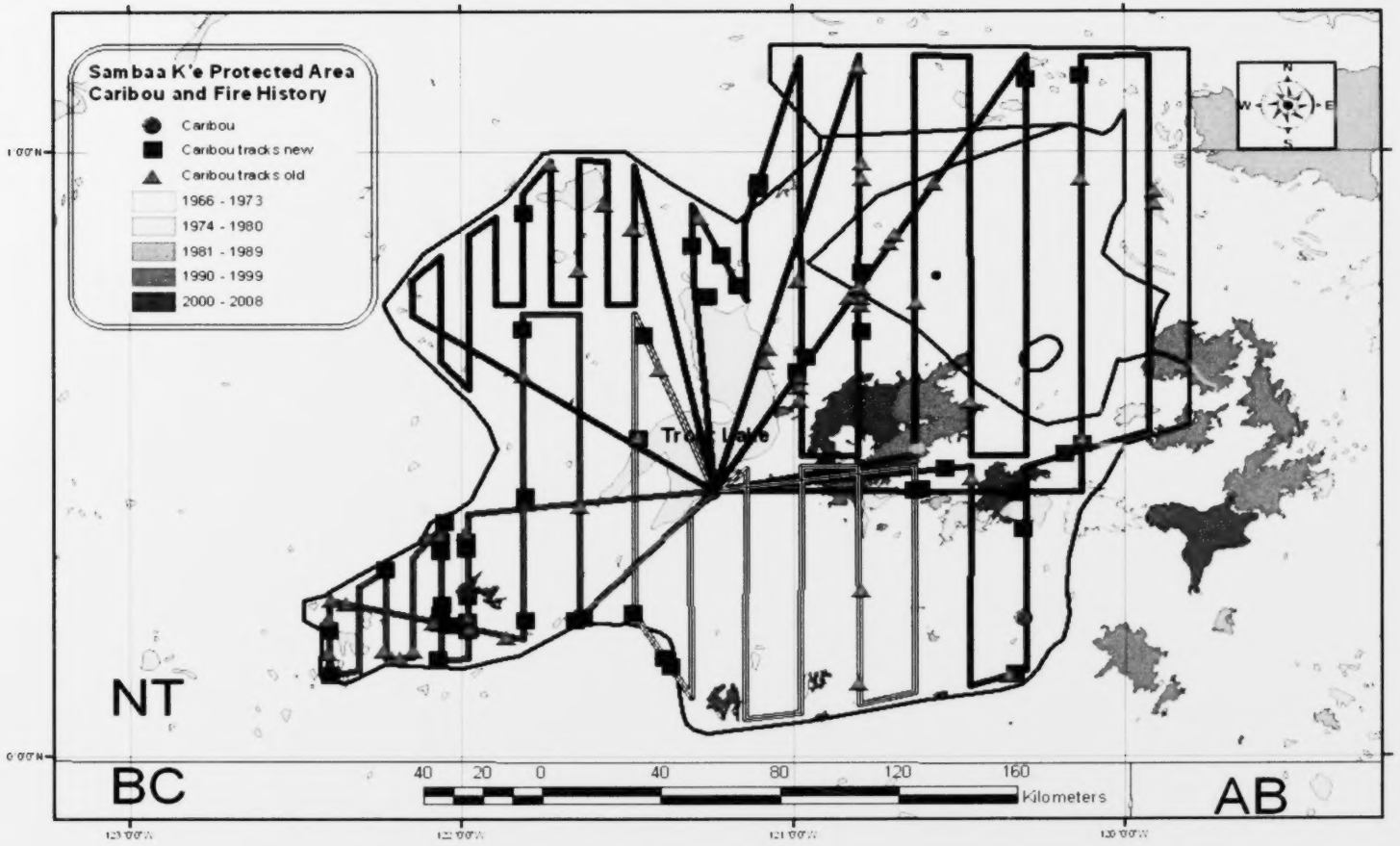

Figure 5. Boreal caribou observations ●, new sign ■, and old sign ▲ in relation to fire history.

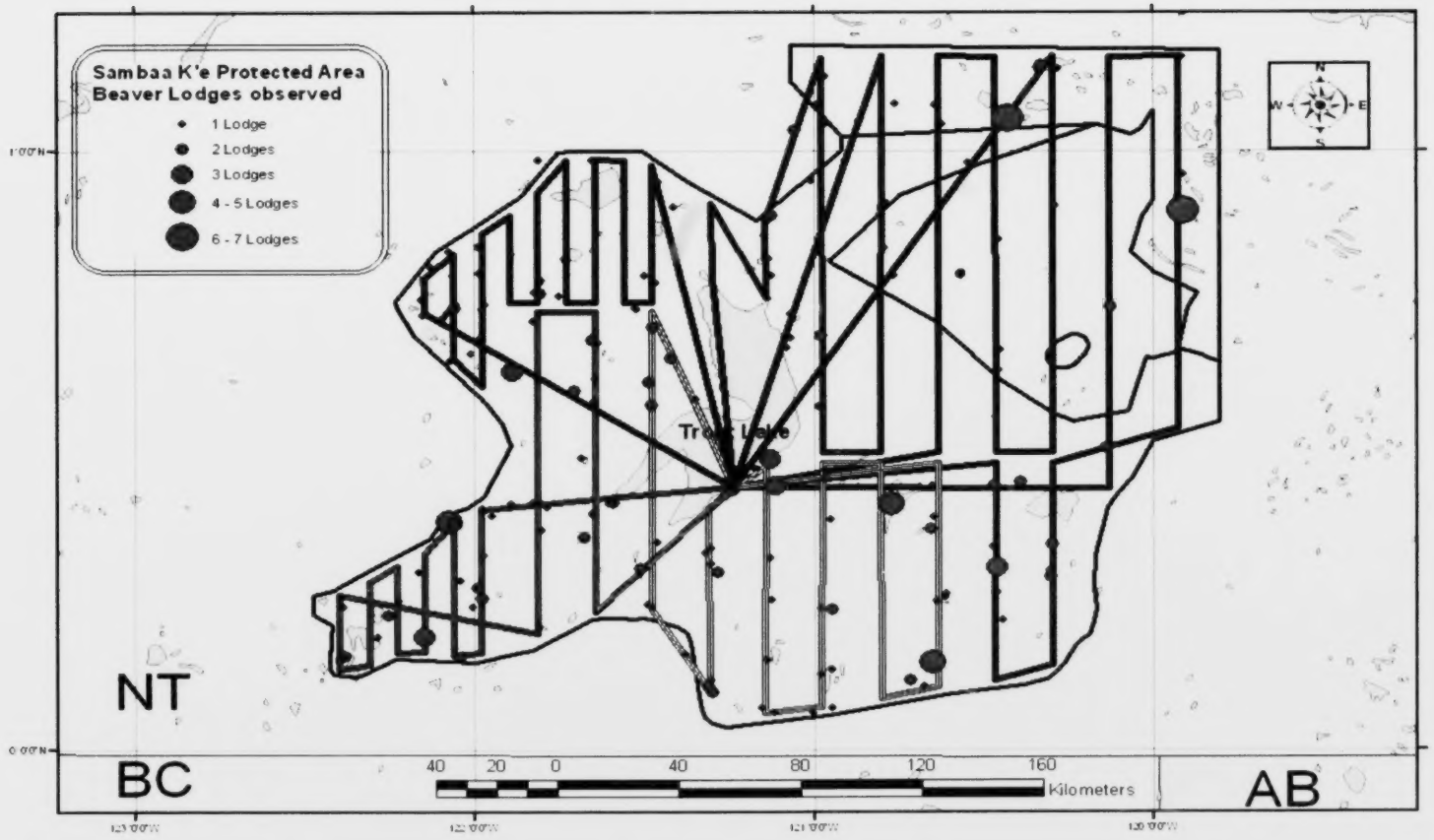

Figure 6. Beaver lodges observed during the survey of the Sambaa K'e Candidate Protected Area.

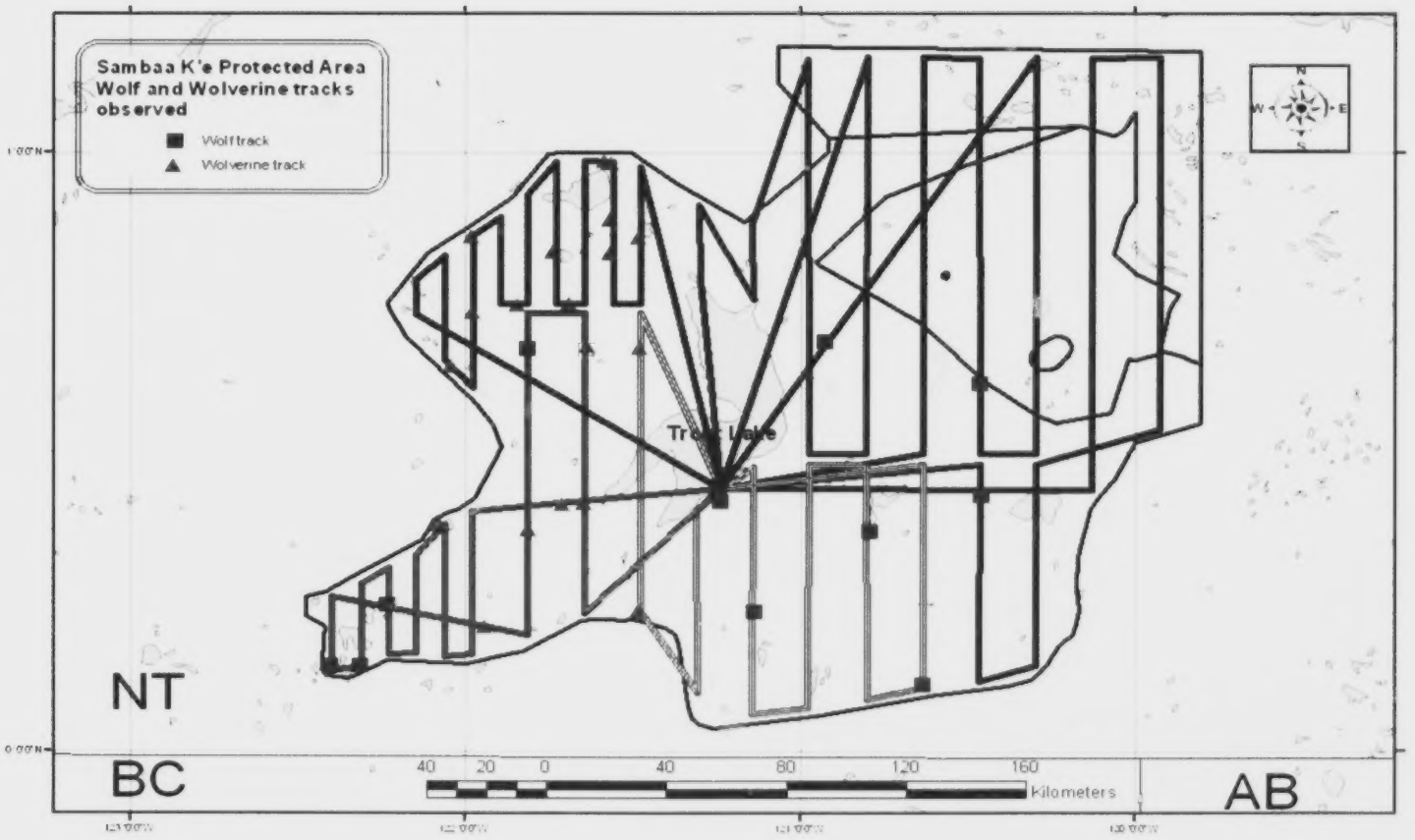

Figure 7. Wolf ■ and wolverine ▲ tracks observed during the survey of the Sambaa K'e Candidate Protected Area.

DISCUSSION

There has been few aerial wildlife surveys conducted in the vicinity of the Sambaa K'e Candidate Protected Area (SKCPA). Small areas were surveyed for beaver lodges as part of a survey of the western Northwest Territories in fall 1989 (Poole and Croft, 1990) and a survey was conducted specifically for boreal caribou in February 2004 (Larter and Allaire, 2005). Boreal caribou equipped with both satellite and GPS radio-collars have been collared throughout the Dehcho and frequent the survey area (Larter and Allaire, 2008). This survey covered the entire SKCPA over a three-day period in March 2009.

It was important that the survey cover the area to the NE of the community of Trout Lake that has not been included in the SKCPA, because knowledge of this area will be important when the issue of access and a final boundary for the SKCPA are discussed later in the protected area process. This and other objectives were met by the survey. Nine different local harvesters participated as observers during the survey and were able to fly over parts of their harvesting areas. The survey was not designed as rigorously as a similar survey conducted over the Edéhzhie Candidate Protected Area (Larter *et al.*, 2006) because the goal was to get more of a general idea and verification of animal distributions in March, not to estimate numbers and densities of wildlife. More detailed information on boreal caribou has been collected already in other studies.

The information collected on beaver lodges was important firstly because local harvesters wanted to get an idea of the amount of beaver presence in the area. Secondly, these data can be used for comparisons with previous surveys

(Poole and Croft, 1990) and as a baseline for future surveys. The survey provided a minimum number of beaver lodges, as some will have been snow covered. It does not provide definitive information on whether beaver lodges were active, although predator tracks might provide some info. These beaver lodges have been mapped so in future fall surveys they can be checked for activity. The number and location of lodges can be compared with data from the survey 20 years ago (Poole and Croft, 1990). ENR Fort Simpson is trying to locate the raw data from these surveys so that such comparisons can be made.

Conditions for observing wildlife and wildlife sign were generally very good for this survey. The areas suspected to have more wildlife were surveyed at higher density and for good reason. More wildlife was observed in relation to the amount of flight line flown in the Celibeta and Cormack Lake areas to the southwest and northwest of SKCPA, respectively. Even with the generally good visibility for the survey some direct observations of wildlife likely were missed. Because most of the flying was earlier in the day when moose appeared to be spending more time lying down we may have missed seeing some moose. Caribou tend to be in denser forested areas at this time of the year. Likely some animals were missed due to reduced sightability. However, fresh wildlife sign was observed and there was an abundance of fresh caribou sign observed during the survey.

Beaver and moose observations frequented small creek drainages throughout SKCPA, with observations more prevalent where there was an abundance of willow growth. The lack of many aspen (*Populus tremuloides*)

stands in the study area may be a reason why beavers are found in areas with abundant willow growth. Where there were aspen trees present, more of the small lakes contained beaver lodges. Based upon the Trout Lake and Dehcho Earthcover classifications (Ducks Unlimited Inc., 2007; 2008), much of the SKCPA is covered by open woodland/mixed needleleaf, open spruce, and low shrub communities often associated with lichen. Not surprisingly boreal caribou sign was seen throughout the survey area. Moose and moose sign was seen to a lesser extent but generally throughout the survey area. Recent large wildfires have burned in the eastern portion of the survey area. Regrowth of these burns may provide improved moose habitat.

ACKNOWLEDGEMENTS

We acknowledge the support of the Sambaa K'e Candidate Protected Area Working Group for this survey. Sambaa K'e Dene Band staff assisted with logistics, pilot and recorder accommodations. We thank all the observers Johnny Deneron, Arthur Jumbo, Edward Jumbo, Tony Jumbo, David Jumbo, Victor Jumbo, Eric Kotchea, Tommy Kotchea and Andrew Lomen. Not only did they provide capable observing skills, but also helped refuel the aircraft, assisted with putting wing covers on the aircraft, and provided transportation for the pilot and recorder. We thank Ducks Unlimited for providing us with data from their earth cover classification projects. Two anonymous reviewers provided comments on earlier drafts of this report. Wolverine Air and their staff provided expert piloting and logistical assistance. Environment Canada provided fuel and funding for the survey aircraft.

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APPENDIX A.

Summary of the observations made on each of the six flight legs of the Sambaa K'e Candidate Protected Area wildlife survey, 11–13 March 2009.

	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6
Fresh Moose Tracks	12	11	8	9	7	10
Old Moose Tracks	5	2	2	0	3	2
Non-calf Moose	5	3	0	0	7	2
Calf Moose	1	2	0	0	2	0
Fresh Caribou Craters/Tracks	3	24	5	9	3	7
Old Caribou Craters	4	17	4	6	7	13
Non-calf Caribou	0	1	0	1	0	0
Calf Caribou	0	0	0	0	0	0
Wolf Tracks	0	4	4	1	2	0
Wolverine Tracks	11	6	2	0	0	1
Beaver Lodges	40	54	67	28	21	25